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form a fourth family of the order Marchantiales: Ricciaceae, Corsiniaceae, Riellaceae, Marchantiaceae, rather than be placed as an aberrant family in the Jungermanniales anacrogynae.—C. R. B.

Cleistogamy.—The examination of a large number of cleistogamous flowers of monocotyls and dicotyls showed HELENE RITZEROW¹⁸ that all are reductions from the chasmogamous forms, and that the reductions follow a definite direction determined by the normal development of the chasmogamous form. The mode of reduction in the various floral parts is described in detail. The pollen grains of many forms germinate within the anther, the pollen tubes emerging in various ways. Chasmogamous flowers are generally so situated upon the plant that they receive better nourishment than the cleistogamous. So many forms are described that the work will be good for reference.

TUZSON¹⁹ has observed for six years two trees of *Robinia Pseudo-Acacia*, 30 to 40 years old, and has found them producing only cleistogamous flowers. Adventitious shoots, six years old, from these trees also produce only cleistogamous flowers. The author believes that in this case the cleistogamy is entirely independent of external conditions and due rather to inner causes.—CHARLES J. CHAMBERLAIN.

Fossil polar plants.—NATHORST,²⁰ in connection with the publication of the results of the Russian Polar Expedition of 1900-1903, has given an account of the Triassic and Jurassic plants from the Island of Kotelny. *Schizoneura* is the only Triassic plant. Among the most interesting Jurassic remains are the leaves and cone scales of a pinelike conifer. As the affinity of these is not absolutely certain in the absence of structural evidence, they are denominated *Pityophyllum* and *Pityolepis* respectively. The scales present a remarkable appearance, for broadening from the base they narrow abruptly to an isthmus about the middle, to expand again at their upper ends. The question naturally suggests itself, whether the upper region does not correspond to the apophysis of modern pines. The reviewer has found somewhat similar cone scales in the Lower Cretaceous. The author takes occasion to criticize the erroneous reference of probable pine needles to the problematical Jurassic genus *Cyclopitys* (*Sciadopitys*). The latter he does not consider to form properly an element of the flora of the Mesozoic as it occurs in the northern hemisphere.—E. C. JEFFREY.

Phylogeny of Archegoniatae and Characeae.—SCHENCK²¹ regards the bryophytes, pteridophytes, and Characeae as unrelated groups, the first two having

¹⁸ RITZEROW, HELENE, Ueber Bau und Befruchtung kleistogamer Blüten. *Flora* 98:163-212. figs. 36. 1907.

¹⁹ TUZSON, JOHANN, Ueber einen neuen Fall der Kleistogamie. *Bot. Jahrb. Systematik, Pflanzengeschichte, und Pflanzengeographie* 40:1-14. pls. 1, 2. 1907.

²⁰ NATHORST, A. G., Mém. Acad. Imp. Sci. St. Petersburg VIII. 21: n. 2. 1907.

²¹ SCHENCK, HEINRICH, Ueber die Phylogenie der Archegoniaten und Characeen. *Engler's Bot. Jahrb.* 42:1-37. 1908.